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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/740,287	12/18/2000	John Karl Waterman	068363.0108	7212

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Paul N. Katz
Baker Botts L.L.P.
One Shell Plaza
910 Louisiana Street
Houston, TX 77002-4995

EXAMINER

KUMAR, SRILAKSHMI K

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 10/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/740,287

Applicant(s)

WATERMAN, JOHN KARL

Examiner

Srilakshmi K. Kumar

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

The following office action is in response to Amendment B, dated July 25, 2003. No claims have been amended or cancelled.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taira et al. (US 6,014,193) in view of Enami et al (US 5,892,493).

As to independent claims 1 and 21, a liquid crystal display and a system for prewriting a video frame in a liquid crystal display, said display and system comprising;

Taira et al disclose a liquid crystal display (LCD) (Fig. 18) having a matrix of liquid crystal pixels (Fig. 18), said matrix further divided into a plurality of sub-matrices of pixels (Fig. 18; at least one digital to analog converter (DAC) adapted to receive a digital input (Fig. 15, DAC) representative of an analog voltage and having an analog output adapted for applying the analog voltage to at least one of the pixels at a time (col. 9, lines 8-17); a plurality of column switches adapted for coupling the analog output of said at least one DAC to at least one of a plurality of columns of said LCD; a plurality of row switches adapted for selectively coupling the plurality of columns to the pixels of said LCD (col. 9, lines 8-17, line 57-col. 10, line 29);

Taira et al disclose logic circuits in col. 9, lines 30-34, but do not disclose where the logic circuits calculate an average voltage. Enami et al disclose logic circuits (Fig. 1, item 44,

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precharging controller) for calculating an average voltage value for each of the plurality of sub-matrices from final voltage values associated with the pixels of each of the sub-matrices (col. 2, line 52-col. 3, line 62); and logic circuits for controlling the plurality of column switches and the plurality of row switches so that each sub-matrix may be precharged with its calculated average voltage value, then each of the pixels charged with the final voltage value representative of that portion of the video frame represented by that pixel (col. 2, line 52-col. 3, line 62). It would have been obvious to one of ordinary skill in the art to incorporate the precharging controller of Enami et al into that of Taira et al as the logic circuits of Taira et al would be able to precharge as well. Further, precharging is advantageous as disclosed in Enami et al, col. 2, lines 45-50, as the LCD would be able to display an image at high quality even if the time to apply the data voltage is short.

As to independent claims 15, 17, and 19, limitations of claims 1 and 21, and further comprising, writing the calculated average voltage values to the pixels in each of the sub-matrices; writing the odd row final voltage values to each of the adjacent odd and even rows of pixels; and writing the even row final voltage values to each of the even row of pixels(col. 2, line 52-col. 3, line 62). It would have been obvious to one of ordinary skill in the art to incorporate the precharging controller of Enami et al into that of Taira et al as the logic circuits of Taira et al would be able to precharge as well. Further, precharging is advantageous as disclosed in Enami et al, col. 2, lines 45-50, as the LCD would be able to display an image at high quality even if the time to apply the data voltage is short.

As to dependent claims 2-5 and 22-25, limitations of claims 1 and 21, and further comprising, wherein the matrix of the liquid crystals is K by L, where K and L are positive

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integer values; further where $K > L$; $K = L$, $K < L$. Taira et al disclose a matrix LCD. It would have been obvious to one of ordinary skill in the art that the matrix is K by L and where, $K > L$; $K = L$, $K < L$ as LCDs are of different sizes.

As to dependent claims 6-11 and 26-31, limitations of claims 1, 2, 21 and 22, and further comprising, wherein each of the sub-matrices is M by N , wherein M and N are positive integer values, K is greater than or equal to M and L is greater than or equal to N , further, where $M = N$; $M > N$, $M < N$. Taira et al disclose in Fig. 18 sub-matrices, where the sub-matrices are M by N . It would have been obvious to one of ordinary skill in the art that the sub-matrices would be of different sizes as well as where the sub-matrices would not be larger than the entire LCD matrix.

As to dependent claims 12 and 32, limitations of claim 7 and 27, and further comprising, wherein $M = N = 8$. Taira et al do not disclose where the sub-matrices are 8×8 . It would have been obvious to one of ordinary skill in the art that the sub-matrices could have easily been 8×8 as LCD's with sub-matrices could have been of any size.

As to dependent claims 13 and 33, limitations of claims 1 and 21, and further comprising, said logic circuits for controlling the plurality of column switches and the plurality of row switches that charge adjacent odd and even rows of the pixels with final voltage values representative of the video frame portion represented by the odd row pixels then charge the even rows of the pixels with final voltage values representative of the video frame portion represented by the even row pixels as shown by Enami et al (col. 2, line 52-col. 3, line 62). It would have been obvious to one of ordinary skill in the art to incorporate the precharging controller of Enami et al into that of Taira et al as the logic circuits of Taira et al would be able to precharge as well. Further, precharging is advantageous as disclosed in Enami et al, col. 2, lines 45-50, as the LCD

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would be able to display an image at high quality even if the time to apply the data voltage is short.

As to dependent claims 14 and 34, limitations of claims 1 and 21, and further comprising, said logic circuits for controlling the plurality column switches and the plurality of row switches that charge adjacent odd and even rows of the pixels with final voltage values representative of the video frame portion represented by the even row pixels then charge the odd rows of the pixels with final voltage values representative of the video frame portion represented by the odd row pixels as shown by Enami et al(col. 2, line 52-col. 3, line 62). It would have been obvious to one of ordinary skill in the art to incorporate the precharging controller of Enami et al into that of Taira et al as the logic circuits of Taira et al would be able to precharge as well. Further, precharging is advantageous as disclosed in Enami et al, col. 2, lines 45-50, as the LCD would be able to display an image at high quality even if the time to apply the data voltage is short.

As to dependent claims 16, 18 and 20, limitations of claims 15, 17 and 19, and further comprising, storing the pixel final voltage values; and storing the calculated average voltage values as shown by the capacitor in Fig. 1 item 18 in Enami et al.

As to dependent claims 35 and 36, limitations of claims 1 and 21, and further comprising, fabricating the LCD on a semiconductor integrated circuit (col. 13, line 60-col. 14, line 10).

Response to Arguments

3. Applicant's arguments filed July 25, 2003 have been fully considered but they are not persuasive.

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The following is in response to applicant's arguments, filed July 25, 2003. The prior art of Taira et al disclose an active matrix liquid crystal display, teaching the components and driving method of the active matrix liquid crystal display. Enami et al disclose a data line precharging apparatus and method for a liquid crystal display. Applicant argues that Enami does not teach or suggest prewriting to groups. Enami teaches precharging data lines and teaches the average of the precharge voltage is calculated and applied to each of line groups A-D (sub-matrix) as stated in col. 9. Applicant, further suggests in arguments, the calculated average of the present invention is one that is the calculated average of the actual "next frame" pixel voltage values of those sub-matrices. This limitation is not claimed.

With respect to the combination of Taira et al with Enami et al, Applicant disagrees with the combination. Applicant states that there is no motivation to combine. Applicant is in agreement that the prior art Taira et al teach a standard active matrix liquid crystal structure as is stated in the applicant's arguments. Enami et al disclose in col. 1, in the background of the invention, that the invention relates to a device and method for driving a liquid crystal display. Further, Enami et al disclose a standard active matrix driven liquid crystal display. It would have been obvious to one of ordinary skill in the art that Taira et al and Enami et al are combinable as they both disclose a standard active matrix liquid display. Further, Enami et al disclose in col. 2, lines 45-50, where with precharging, the liquid crystal display would be able to display an image at high quality even if the time to apply the data voltage is short. Thus it is shown that the combination of Taira et al and Enami et al disclose the limitations of the claimed invention.

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Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Srilakshmi K. Kumar** whose telephone number is **(703) 306 5575**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Saras, can be reached at (703) 305-9720.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703 305 47000377.

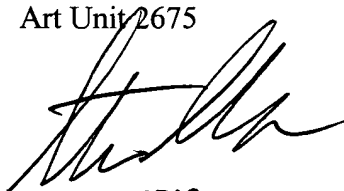
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Srilakshmi K. Kumar whose telephone number is 703 306 5575. The examiner can normally be reached on 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven J. Saras can be reached on 703 305 9720. The fax phone numbers for the organization where this application or proceeding is assigned are 703 872 9314 for regular communications and 703 308 9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305 4700.

Srilakshmi K. Kumar
Examiner
Art Unit 2675

SKK
October 18, 2003



STEVEN SARAS
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600